

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-24 (cancelled)

Claim 25 (currently amended): The semiconductor wafer package device according to claim 24 46 wherein each said device is a digital micromirror device.

Claim 26 (currently amended): The semiconductor wafer package device according to claim 24 46 wherein said micromechanical components are micromirrors.

Claims 27-30 (cancelled)

Claim 31 (currently amended): The semiconductor wafer package device according to claim 24 48 wherein said solder is selected from a group consisting of lead/tin, indium, tin/indium, tin/silver, tin/bismuth, solder paste, and solder-coated spheres.

Claims 32-35 (cancelled)

Claim 36 (withdrawn): A method of packaging a micromechanical semiconductor device, comprising the steps of:

providing an integrated circuit chip including a plurality of micromechanical components covered by a protective material and configured in a plane in the central portion of said chip, said chip further including a plurality of terminals disposed in peripheral portions of said chip;

providing an electrically insulating substrate having first and second surfaces and an opening, a first plurality of contact pads disposed on said first surface adjacent said opening, and a second plurality of contact pads disposed on said first surface remote from said opening;

soldering said terminals in peripheral portions of said chip to said first plurality of contact pads disposed on said first surface of said substrate such that said chip covers said opening in said substrate;

inserting an encapsulant between said chip and said substrate around said opening in said substrate;

removing said protective material, thereby exposing said micromechanical components; and

attaching a lid to said second substrate surface, said lid covering said opening in said substrate.

Claim 37 (withdrawn): The method of Claim 36, wherein said step of providing an integrated circuit chip comprises the steps of:

providing a semiconductor wafer having a surface including a plurality of micromechanical integrated circuits, each of said integrated circuits including a terminal;

coating said wafer surface with a protective material;

selectively removing said protective material to expose said terminal on each of said integrated circuits;

depositing solder on each of said exposed terminals; and

separating the resulting structure into discrete integrated circuit chips.

Claim 38 (withdrawn): The method according to Claim 36 wherein said step of soldering comprises the steps of:

depositing a solder ball on at least one of said plurality of terminals disposed in peripheral portions of said chip;

aligning said chip and said substrate so that said solder ball is placed into proximity with one of said contact pads on said substrate;

contacting said ball and said contact pad;

supplying thermal energy to said chip and said substrate, whereby said solder is reflowed to form a solder joint and said chip is mounted to said substrate spaced apart by a gap, forming an assembly;

controlling the height of said solder joint;

cooling said assembly from the reflow temperature to a temperature still elevated above ambient temperature and maintaining said elevated temperature at a substantially constant level;

inserting a polymeric precursor between said chip and said substrate at said elevated temperature, thereby surrounding said opening with said precursor;

supplying additional thermal energy for curing said polymeric precursor, thereby forming a polymeric encapsulant; and

cooling said assembly to ambient temperature.

Claim 39 (withdrawn): The method according to Claim 37 wherein said elevated temperature is between 90 and 130 °C.

Claim 40 (withdrawn): The method according to Claim 37 wherein said elevated temperature is approximately 100 °C.

Claim 41 (withdrawn): The method according to Claim 36 wherein said step of controlling the height of said solder joint comprises the steps of:

applying radiant energy sufficient to put said solder ball into a liquid state;

contacting the ball to said contact pad;

dwelling for metallurgical interaction;

establishing desired connection height; and

removing said radiant energy.

Claim 42 (withdrawn): The method according to Claim 36 further comprising the step of disposing a plurality of solder balls onto said second plurality of contact pads.

Claim 43 (withdrawn): The method according to Claim 36 further comprising the step of depositing a passivant in said substrate opening before attaching said lid to said second substrate surface.

Claim 44 (withdrawn): The method according to Claim 36 wherein said protective material is a layer of photoresist material.

Claims 45 (cancelled)

Claim 46 (new): A semiconductor wafer comprising:

- a plurality of devices, each device including of an integrated circuit and a plurality of micromechanical components configured in a plane in a central portion of a surface of said device, and
- a plurality of terminals disposed in peripheral portions of said surface of said device serving as electrical inputs/outputs of said integrated circuit and said micromechanical components,

wherein said semiconductor wafer is coated with a protective material.

Claim 47 (new): The semiconductor wafer of claim 46 wherein said protective material is partially removed to expose said plurality of terminals of each device.

Claim 48 (new): The semiconductor wafer of claim 47 further comprising solder electrically connected to said plurality of terminals in the peripheral portions of said surface of each said device.

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Claim 49 (new): The semiconductor wafer of claim 48 wherein said solder comprises solder balls respectively located on said exposed terminals.